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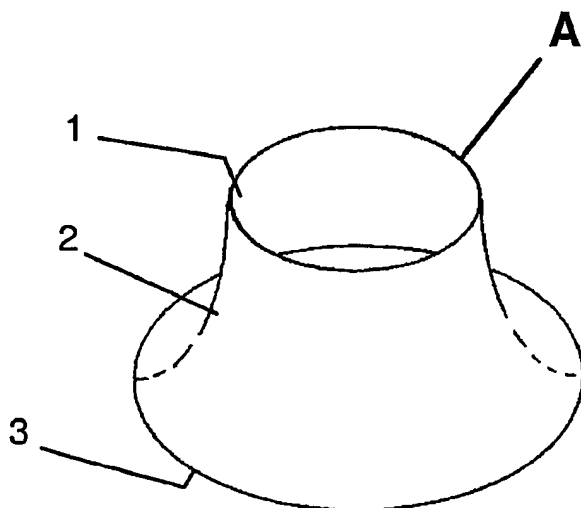
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(54) Title: IMPROVEMENTS IN OR RELATING TO SWIRLING FLUID FLOWS AND JETS



(57) Abstract: The present invention relates to improvements in or relating to swirling fluid flows and jets. In particular it concerns apparatus for controlled expansion (or contraction) of a swirling fluid flow, and a means for creating an annular swirling fluid flow, which, it will be shown, is particularly amenable to expansion. In one aspect, we describe a swirling fluid flow expansion apparatus comprising a flared nozzle having an inlet for operative connection to a swirling fluid flow, an outlet and an intermediate body having predetermined dimensional characteristics. We also describe embodiments of swirling fluid flow generators. In one embodiment, there is an inlet duct for operative connection to a pressurised fluid source, an outlet duct coaxial with the inlet duct and an intermediate generator body comprising at least one aperture defining a fluid flow path between the inlet duct and outlet duct wherein the fluid flow path has an axis orthogonal to that of the outlet duct. In another aspect, the generator comprises an impeller mounted within a duct having an inlet and an outlet defining a fluid flow path. The impeller includes an impeller

body having a central axial longitudinal flow blocking portion and star-shaped arms; the impeller further comprising impeller blades connected to, or formed with the impeller body, along a tangential line. We also describe a swirling fluid flow apparatus comprising a swirling fluid flow generator and a swirling fluid flow expansion apparatus as described above.